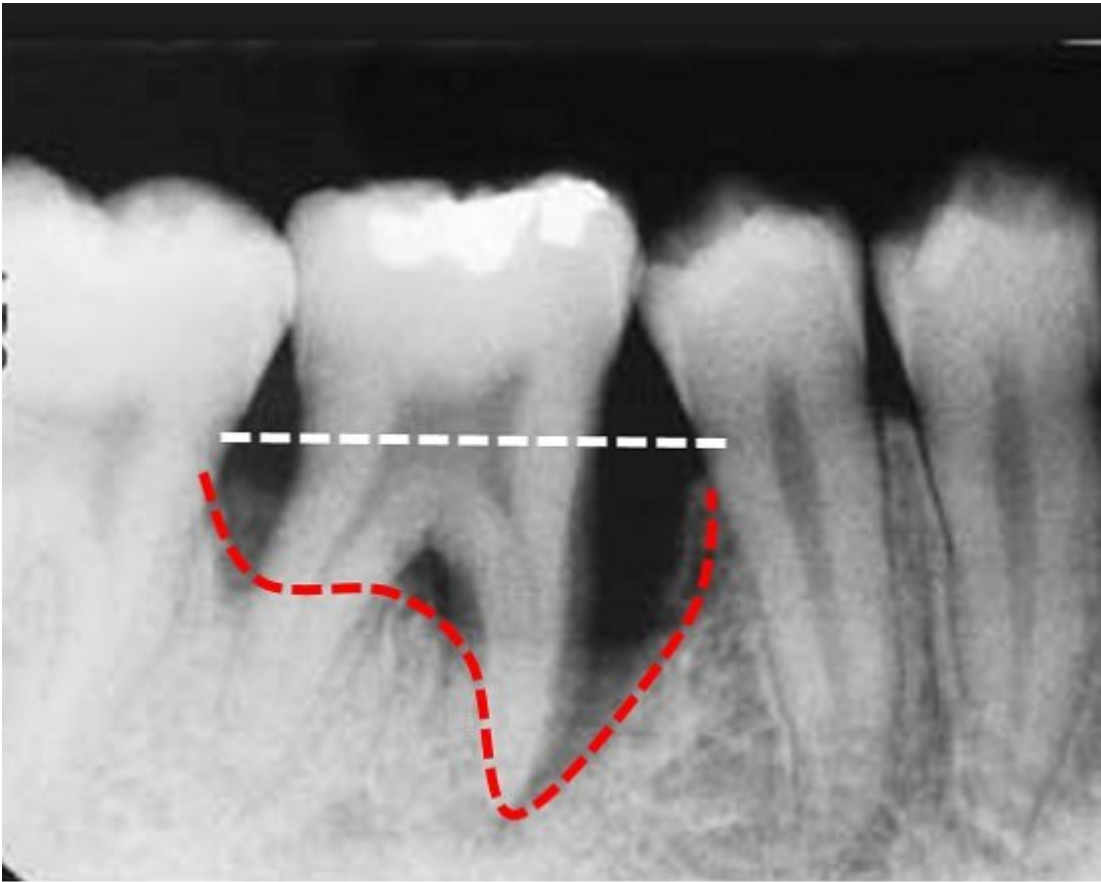


Jawbone loss predates rheumatoid arthritis

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In the above x-ray image, the white dotted line indicate the normal jawbone level at a molar site in the lower jaw. The individual has periodontitis and has therefore lost jawbone support (red line). The bottom x-ray image shows a foot with typical bone destrguction (red arrows) typical for rheumatoid arthritis.
Credit: Pernilla Lundberg and Solbritt Rantapää-Dahlqvist

Jawbone loss caused by periodontitis predates the onset of rheumatoid arthritis. This according to research from Umeå University in Sweden presented in the journal *Arthritis & Rheumatology*. The research also shows a causal relationship between jawbone loss and elevated levels of the bone resorption inducing molecule RANKL in the blood.

Jawbone loss caused by inflammation is characteristic to both periodontitis - a disease leading to tooth loss - and [rheumatoid arthritis](#). Despite differences in what causes the inflammation in periodontitis or rheumatoid arthritis, it has now been established that there is a correlation between the two.

"For example, it's known that individuals with rheumatoid arthritis to a great extent show symptoms of [tooth loss](#) than individuals with healthy joints. It's also been known that treatments aimed at periodontitis also ease symptoms from joints in individuals with rheumatoid arthritis. What's not been proven so far, however, is a [causal relationship](#) between the two," says Pernilla Lundberg, senior lecturer at the Department of Odontology at Umeå University, and one of the researchers behind the study.

In a collaboration, Pernilla Lundberg and Solbritt Rantapää-Dahlqvist, who is a researcher at the Department of Public Health and Clinical

Medicine at Umeå University, have analysed the prevalence of [jawbone](#) loss in dental x-rays of individuals with rheumatoid arthritis. The X-rays were performed before arthritis symptoms had developed, and were compared with X-rays from matching controls. All participants in the study had on numerous occasions donated blood to the Medical Biobank Northern Sweden Health and Disease Study. Dental X-rays had been retrieved from the treating dentists.

The results, now presented in the journal *Arthritis & Rheumatology*, show for the first time that the individuals who later develop rheumatoid arthritis to a greater degree show signs of jawbone loss. Individuals with rheumatoid arthritis also to a greater extent develop jawbone loss over time. Among the individuals who later developed rheumatoid arthritis, the greatest degree of bone loss was detected in individuals who also showed elevated levels of the [bone resorption](#) inducing molecule RANKL in the blood.

"As far as we know, no one has previously been able to show that individuals who later develop rheumatoid arthritis have a higher degree of jawbone loss before showing any symptoms of arthritis," says Solbritt Rantapää-Dahlqvist.

"Our results indicate a causal relationship between [periodontitis](#) and rheumatoid [arthritis](#). Nevertheless, further clinical studies and studies on basic mechanisms are needed in order to prove the existence of a causal relationship with certainty."

More information: Elin Kindstedt et al, Marginal jawbone loss is associated with onset of rheumatoid arthritis and is related to plasma level of receptor activator of nuclear factor kappa-B ligand (RANKL), *Arthritis & Rheumatology* (2017). [DOI: 10.1002/art.40394](https://doi.org/10.1002/art.40394)

Provided by Umea University

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